

herewith. Applicants' undersigned attorney states that the substitute specification does not introduce impermissible new matter into the disclosure.

IN THE CLAIMS:

Kindly amend claims 1-6 by rewriting them in amended form as follows:

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1. (Amended) A fingerprint reading device comprising:

an active matrix liquid crystal cell having a front surface facing a user and a rear surface opposing the front surface;

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an illumination source for projecting a light from the rear surface to the front surface of the active matrix liquid crystal cell;

a light guiding plate on the front surface of the active matrix liquid crystal cell for transmitting the light projected from the rear surface of the active matrix liquid crystal cell and deflecting light entering from the front surface toward a side end surface of the light guiding plate;

light receiving means on the side end surface of the light guiding plate for receiving the deflected light exiting from the side end surface of the light guiding plate; and

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a drive circuit for driving the active matrix liquid crystal cell to pinpoint-irradiate a fingerprint in contact with the light guiding plate by pinpointing with the light emitted from the illumination source and causing the light receiving means to pinpoint-receive the light reflected by the fingerprint to thereby obtain an image of the fingerprint.

2. (Amended) A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell comprises a liquid crystal cell of a liquid crystal display device.

3. (Amended) A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell is provided in superposition on at least a part of a liquid crystal cell of a liquid crystal display device.

4. (Amended) A fingerprint reading device according to claim 1; wherein the light receiving means comprises a line sensor provided along the side end surface of the light guiding plate.

5. (Amended) A fingerprint reading device according to claim 1; wherein the light receiving means comprises a light receiving element and one of a lens or a lens array for converging on the light receiving element the light exiting from the side end surface of the light guiding plate.

6. (Amended) A fingerprint reading method comprising the steps of:

providing an active matrix liquid crystal cell;

providing illuminating means for projecting light from a rear surface of the active matrix liquid crystal cell;

providing a light guiding plate on a front surface of the active matrix liquid crystal cell opposite the rear surface for receiving the light coming from the rear surface and deflecting the received light toward a side end surface of the light guiding plate;

selectively pinpoint-irradiating a fingerprint touching a front surface of the light guiding plate through the active matrix liquid crystal cell with the light projected from the rear surface of the active matrix liquid crystal cell;

receiving the light reflected by the fingerprint and exiting from the side end surface of the light guiding plate; and

using the received light reflected by the fingerprint to obtain an image of the fingerprint.

Kindly add the following new claims 7-26:

7. A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell has a matrix

of transparent electrodes driven by thin film switching elements.

8. A fingerprint reading device according to claim 7; wherein the thin film switching elements comprise one of thin film transistors, insulated gate field effect transistors, and thin film diodes.

9. A fingerprint reading device according to claim 1; wherein the active matrix liquid crystal cell has a resolution of about 300 dpi and a pitch between adjacent pixels of about 50 μm .

10. A fingerprint reading device according to claim 1; wherein the side end surface of the light guiding plate is disposed at a right angle with respect to the front and rear surfaces of the active matrix liquid crystal cell.

11. A fingerprint reading device comprising: a liquid crystal cell having a plurality of separately addressable pixels, a front surface facing a user and a rear surface opposite the front surface; an illumination device for projecting light from behind the rear surface through the front surface of the liquid crystal cell to illuminate a finger placed over the front surface; a light receiving device for receiving light reflected by the finger; and a drive

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circuit for sequentially driving the respective pixels of the liquid crystal cell to project light from the illumination device onto the finger so that an image of the finger can be obtained based on the reflected light.

12. A fingerprint reading device according to claim 11; wherein the liquid crystal cell comprises an active matrix liquid crystal cell.

13. A fingerprint reading device according to claim 11; further comprising a light guiding plate disposed over the front surface of the liquid crystal cell for transmitting the light projected from the rear surface of the liquid crystal cell and deflecting light entering from the front surface toward a side end surface of the light guiding plate.

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14. A fingerprint reading device according to claim 13; wherein the light receiving device is disposed adjacent to the side end surface of the light guiding plate for receiving the deflected light.

15. A fingerprint reading device according to claim 13; wherein the light receiving device comprises a light receiving element and one of a lens and a lens array for converging on the light receiving element the light exiting from the side end surface of the light guiding plate.

16. A fingerprint reading device according to claim 15; wherein the drive circuit controls the liquid crystal cell by sequentially activating respective pixels thereof so that the light emitted by the illumination device is irradiated onto the fingerprint pixel by pixel and light reflected by the fingerprint is received by the light receiving device so that an image of the finger can be obtained.

17. A fingerprint reading device according to claim 13; wherein the light receiving device comprises a line sensor provided along the side end surface of the light guiding plate.

18. A fingerprint reading device according to claim 13; wherein the light receiving device comprises a light receiving element and one of a lens or a lens array for converging on the light receiving element the light exiting from the side end surface of the light guiding plate.

Sub 61 19. A fingerprint reading device according to claim 13; wherein the side end surface of the light guiding plate is disposed at a right angle with respect to the front and rear surfaces of the liquid crystal cell.

20. A fingerprint reading device according to claim 11; wherein the liquid crystal cell comprises a liquid crystal cell of a liquid crystal display device.

21. A fingerprint reading device according to claim 11; wherein the active matrix liquid crystal cell comprises a first transparent substrate, a second transparent substrate, a spacer joining the first and second transparent substrates so that a gap is formed therebetween, a layer of liquid crystal material filled in the gap, and a plurality of pixel elements arranged in a matrix for altering the light transmission characteristics of the liquid crystal material.

22. A fingerprint reading device according to claim 21; wherein the pixel elements comprise a transparent electrode and an active switching element formed on one of the transparent substrates facing the liquid crystal material layer.

23. A fingerprint reading device according to claim 11; wherein the active matrix liquid crystal cell is superimposed on a liquid crystal cell of a liquid crystal display device.

24. A fingerprint reading device according to claim 11; wherein the liquid crystal cell has a matrix of transparent electrodes driven by thin film switching elements.

25. A fingerprint reading device according to claim 24; wherein the thin film switching elements comprise one of